

REMARKS

Reconsideration and withdrawal of the rejection and the allowance of all claims now pending in the above-identified patent application (i.e., Claims 18-35) are respectfully requested in view of the foregoing amendments and the following remarks.

At the outset, it should be recognized that the present invention relates to a plough, particularly a marine plough for the burial of cables and pipelines in a seabed of other below water surface. Various marine ploughs currently known to the prior art suffer from the disadvantage that the direction of travel of the plough is affected by changes in the tow rope direction, along with any sideways forces, for example, as from side slopes that the plough may be traversing, which result in the marine plough, or at least a portion of it, being effectively dragged sideways across the seabed.

The present invention, as now broadly claimed, includes a plough comprising a plough share, one or more steerable soil-engaging fins and a tow rope attachment mechanism having a tow rope retention point. The tow rope retention points includes means for adjusting the position of the tow rope retention point relative to the plough, thereby altering the position at which the line of a tow rope retained by the tow rope retention point crosses the longitudinal axis of the plough, so that the plough can operate at a range of offset

tow positions. The steerable soil-engaging fins, as now properly claimed, are capable of being independently controlled vis-a-vis the means for adjusting the position of the tow rope retention point relative to the plough body.

As will be explained in greater detail hereinafter, nowhere in the prior art is such a novel and efficient plough for marine use, which may properly operate in an offset tow position, either disclosed or suggested.

By the present amendment, Applicant has amended independent Claim 18 (and Claims 19-31 via dependency) to correctly recite (in contrast to the original version of Claim 18) that the steerable soil-engaging fin(s) of the present invention may be controlled independently of the means for adjusting the position of the tow rope retention point relative to the plough body. Applicant and his attorney apologize for any misunderstanding caused by the previously-entered version of Claim 18.

Applicant wishes to thank the Examiner for his allowance of Claims 32-35, which have been retained in the application without further amendment.

Applicant is filing a Request for Continued Examination ("RCE") and RCE filing fee of \$770.00 (large entity) with the present Amendment in light of the finality of the last Office Action. Withdrawal of the finality of the last Office Action,

entry of the foregoing claim amendment, as of right, and a full consideration of the merits of all claims now pending are, therefore, respectfully requested and submitted to be proper.

Turning now, in detail, to the Examiner's prior art rejection, in the final Office Action the Examiner has rejected Claims 18-24 and 27-31 as being obvious, pursuant to 35 U.S.C. §103(a), over Grinsted, U.S. Patent No. 4,802,793, taken in view of Reece, U.S. Patent No. 4,329,793. It is the Examiner's contention that Grinsted '793 discloses a pipeline or cable plow comprising a plough body, a tow rope attachment mechanism having a tow rope retention point for the tow rope, means for adjusting the position of the tow rope retention point relative to the plough body, a plough share for penetrating the seabed as the plough share is pulled by the tow rope, etc. The Examiner, however, does acknowledge that Grinsted '793 "fails to disclose or fairly suggest" soil-engaging fins carried by supporting skids. The Examiner has, therefore, secondarily cited to Reece '793, and has contended that Reece '793 discloses of a trenching plow having a pair of supporting skids carrying steerable soil-engaging fins or blades (34). Consequently, the Examiner has concluded that it would have been obvious to have added the fins of Reece '793 to the supporting skids of Grinsted '793, the primary reference, for enhancing the stability of the plough while in use.

In reply to the Examiner's obviousness rejection of Claims 18-24 and 27-31, the Examiner cites to Grinsted '793 for its disclosure of means for adjusting a position of a tow rope retention point (37, 46, 50), however, upon a careful reading of the primary citation, it would appear that reference numeral "37" denotes a ram (Grinsted '793 at Col. 3, lines 63-67) for adjusting the depth of the skids (32) therein. Further, while the Examiner contends that the skids (32) in Grinsted '793 are steerable, it is respectfully submitted that this is not so; there is no mechanism in Grinsted '793 for steering the skids. Rather, the skids are always aligned with the longitudinal axis of the plough.

As the Examiner has conceded, the primarily-applied reference of Grinsted '793 "fails to disclose or fairly suggest" steerable soil-engaging fins carried by the supporting skids, which Reece '793, in fact, does disclose and why the Examiner has secondarily-applied Reece '793. Applicant respectfully submits that, because Grinsted '793 "fails to disclose or fairly suggest" the feature for which Reece '793 has been secondarily applied, that the combination of references cited by the Examiner is improper and should be withdrawn. See, In re Fritch, 972 F.2d 1260, 1266, 23 USPQ2d 1780, 1784 (Fed. Cir. 1992) ("The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification."); In re

Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984) (same); Carella v. Starlight Archery and Pro Line Co., 804 F.2d 135, 140, 231 USPQ 644, 647 (Fed. Cir. 1986) (fact that teachings found in the prior art could be combined, as proposed by the Examiner, does not make the combination obvious "absent some teaching, suggestion or incentive supporting the combination").

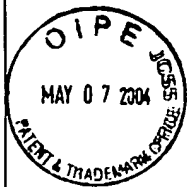
Technically, Applicant further wishes to point out that the two independent modes of steering encompassed within the presently-claimed invention (*i.e.*, via use of a tow rope and use of steerable fins) both have their disadvantages: Using a tow wire, or rope, for steering the plow is problematic in that it is inherently difficult to achieve a fine level of control of the plough direction, taking into account such factors as the motion of the towing vessel and the unevenness of the surface being plowed. The use of ground steering via steerable fins potentially provides a better degree of fine control, but the steerable fins have to carry side forces, which reduce the effectiveness of the steering when the angle of offset of the tow line increases.

Surprisingly, the use of the two steering systems, which is not properly suggested by the prior art, provides a steering mechanism having advantages greater than the mere sum of the two individuals manner of steering: Specifically, by providing a mechanism for adjustment of the tow rope attach-

ment point, in addition to steerable soil engaging fins, it is possible to both achieve fine control of the steering with offset tow angles and, further allow for a larger offset angle to be used than would otherwise be possible. In marine environments, the additional flexibility provided by the ability to achieve fine control at a wide range of offset tow angles is a major advantage and facilities, for example, cable-laying activity in conditions (both ground conditions, such as slopes, and adverse weather conditions) where this would otherwise be impossible:

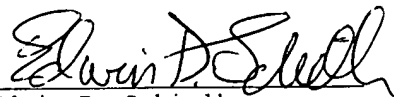
Because the dual use of two independent steering mechanisms, as utilized by the present invention and as now claimed, is neither disclosed nor suggested by the prior art (setting to one side the correctness of the combination of references applied), Applicant respectfully contends that Claims 18-24 and 27-31, as now pending, are not obvious over the applied combination of Grinstead '793, taken in view of Reece '793, and that withdrawal of the Examiner's 35 U.S.C. §103(a) obviousness rejection of the final Office Action is respectfully requested.

In view of the foregoing, it is respectfully contended that all claims now pending in the above-identified patent application (i.e., Claims 18-35) recite a novel and efficient plough for marine use, which may properly operate in an offset tow position utilizing two independent steering mechan-



isms, which is patentably distinguishable over the prior art. Accordingly, withdrawal of the outstanding rejection and the allowance of all claims now pending are respectfully requested and earnestly solicited.

Respectfully submitted,
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May 3, 2004

- Enc.: 1. Request for Continued Examination; and,
2. Check for \$770.00 (RCE Filing Fee).

The Commissioner is hereby authorized to charge the Deposit Account of Applicant's Attorney, Account No. 19-0450, for any additional fees which may be due in connection with the prosecution of the present application, but which have not otherwise been provided for.